

CLAIMS

What is claimed is:

1. A method of calculating a predicted lens power needed to provide a post-operative spherical equivalent to correct myopia in a phakic eye of a patient using
5 an intraocular lens, the method comprising the steps of:

a. measuring pre-operative and post-operative characteristics of the eye, including spherical equivalent, vertex distance, anterior chamber depth, keratometry, desired post-operative spherical equivalent, and first eye residual intraocular lens power; and

10 b. using each of the measured pre-operative characteristics and desired post-operative characteristics in a lens power prediction model to calculate the predicted lens power; and

c. wherein the lens power prediction model is a mathematical formula using the measured pre-operative and desired post-operative characteristics of the
15 eye and corresponding coefficients substantially as follows

$$\begin{aligned} & 3.9546 \\ & + 0.4001 * \text{PreMSE} \\ & + 0.4272 * \text{PreCSE} \\ & + (\text{PreMSE} - (-12.6676)) * ((\text{PreCSE} - (-12.5002)) * -0.2723) \\ 20 & + (\text{PreCSE} - (-12.5002)) * ((\text{PreCSE} - (-12.5002)) * 0.1308) \\ & + (\text{PreMSE} - (-12.6676)) * ((\text{PreMSE} - (-12.6676)) * 0.155) \\ & + -0.7378 * \text{ACD} \\ & + -0.042 * \text{AXL} \\ & + (\text{PreMSE} - (-12.6676)) * ((\text{AXL} - 27.6371) * 0.0843) \\ 25 & + (\text{ACD} - 3.6609) * ((\text{AXL} - 27.6371) * 0.2639) \\ & + (\text{PreCSE} - (-12.5002)) * ((\text{ACD} - 3.6609) * 0.1064) \end{aligned}$$

$$\begin{aligned} &+ (\text{PreCSE} - (-12.5002)) * ((\text{AXL} - 27.6371) * -0.0698) \\ &+ -0.065 * \text{PreKStp} \\ &+ -0.1043 * \text{POMSE} \\ &+ -0.2801 * \text{POCSE} \\ 5 \quad &+ (\text{POMSE} - (-0.5511)) * ((\text{POCSE} - (-0.4173)) * 0.0675) \\ &+ 0.0027 * \text{Age} \\ &+ (\text{Age} - 39.4711) * ((\text{PreKStp} - 45.4349) * 0.007) \\ &+ (\text{PreCSE} - (-12.5002)) * ((\text{ACD} - 3.6609) * ((\text{AXL} - 27.6371) * -0.028)) \\ &+ 0.4752 * \text{First Eye Residual} \\ 10 \quad &+ 0.40 * \text{PredChgAveK} \end{aligned}$$

wherein PreCMAv is a weighted average of the pre-operative cycloplegic
and manifest spherical equivalents (PreCSE and PreMSE),

AXL is the axial length,

15 POMSE is the desired post-operative manifest spherical equivalent.

POCSE is the desired post-operative cycloplegic spherical equivalent,

PreKStp is the preoperative steep keratometry measurement,

PredChgAveK is the predicted change in average keratometry,

ACD is the anterior chamber depth,

20 PreKAv is the pre-operative average keratometry, and

First Eye Residual is the residual intraocular lens power found after the
first eye surgery.